

Hooke's Law Lab
AP Physics

29 Points Total

The goal of this lab is to investigate the relationship between the force applied to a rubber band and the distance the spring stretches. This relationship is called Hooke's law, and we will also determine whether rubber bands obey the relationship over the full stretching distance.

Safety: Use common sense, and do not shoot the rubber bands at each other.

Instructions:

1. For each applied force, measure the distance the rubber band stretches from its original, unstretched position.
2. Record the applied force and the distance.
3. Test a wide range of displacements, but do not break the rubber band. Be careful when stretching the rubber band near its breaking point.

Rubric:

1. Procedure (3 points).
2. Data table (3 points).
3. Graphs (8 points). For each rubber band, graph force on the y-axis and distance on the x-axis.
4. Questions:
 - a. Describe in words what the spring constant tells you about a spring or rubber band (2 points).
 - b. From your data, either
 - i. Justify the nonexistence of a spring constant, or
 - ii. Justify the rubber band's obedience to Hooke's law (6 points).
 - c. If there are spring constants, list them in the data table.
5. Sources of error and ways to minimize (4 points; 2 each).
6. Conclusion sentences (3 points).